

Notes on Parasites collected by the late Charles Darwin, Esq.
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IN the autumn of 1869 I received a letter from Mr. Darwin as follows:—

Down, Beckenham, Kent,
August 9.

“DEAR SIR,—

“In looking over some bottles with specimens in spirit from S. America and adjoining seas, collected by me nearly forty years ago, I find a few parasitic worms, which it has occurred to me you might possibly like to have. Should this prove the case, be so kind as to inform me and they shall be sent to you. I have looked at only one lot, viz. from the *Rhea*, or American Ostrich, and these seemed not in a bad state; 2nd, worms from stomach of a Porcupine; 3rd, from the mouth of a Snake; 4th, from the wild *Cavia Cobaya*—these might be compared with any worms from the domestic Guinea-pig, which some authors think (I believe falsely) to be descended from the *C. Cobaya*. Also three sets from fish; but as I was very ignorant when I collected them, these perhaps are Lerneæ or their allies. Should you care to have these specimens, I will give exact locality and date at which they were preserved.

“Pray believe me,

“Dear Sir,

“Yours faithfully,

“CHARLES DARWIN.”

Having promptly accepted the offer I soon received the specimens, with a list of dates, and also of numbers corresponding with others stamped on metallic labels in the bottles referred to. In reference to the parasites from a *Capybara* Mr. Darwin, at the same time, corrects a passage in the above-quoted letter, remarking thus:—“N.B. I see I made a mistake and spoke in my letter of *Cavia Cobaya*.”

Although the collection is a very small one, and although shortly after receiving it I gave some account of two of the parasites in papers contributed to the Zoological Society, I have thought that a more complete notice of the collection ought to be

placed on record. The data, though fragmentary, will at least serve to show that Mr. Darwin paid more attention to parasites than many of the later travelling naturalists who have enjoyed far larger opportunities of collecting them.

1. *FILARIA HORRIDA*, *Diesing*.

F. rheæ, *Owen*.

Dicheilonema, *Diesing*.

Up to the year 1874 I had seen no figure of this entozoon; but the species was at that time readily identified from the descriptions of Owen and Diesing. Mr. Darwin's specimens comprised three male and seven female worms, and were distinctly labelled, "From the stomach of a Rhea, Bahia Blanca, North Patagonia, 1832." At the time of writing the paper quoted below, I thought it not improbable that Mr. Darwin had anticipated Natterer's discovery. Such was not the case. The original finds of this entozoon were made by Natterer at Arica, Cuyaba, and Caigara in 1823-4-6 respectively; all the worms being lodged within the cavity of the thorax of the host. Full particulars of the finds and an excellent account of the anatomy of the worms are given by Diesing. It is noteworthy that the longest of Darwin's female specimens was under 30 inches, whilst Natterer's largest worm was over 33 inches, and Schneider gives the greatest length attained in a specimen as beyond 52 inches, or up to 1360 millim. I may mention that when engaged in forming a special collection of Entozoa for the Hunterian Museum in 1865, I found several unnamed specimens of this worm in the store-rooms of the College. They had doubtless been given to Prof. Owen by Natterer some 25 years previously, for I find that Diesing makes mention of such a donation. In his well-known article "Entozoa," quoted below, Owen speaks of a female worm as being "about 30 inches in length." My measurement of one of the same series gave a length of 35 inches. Schneider's subsequent account of the number and position of the oval and caudal papillæ cleared up all doubts which existed on these anatomical points. Considering the affinities of this entozoon with the Guinea-worm, it would be a great gain to possess some knowledge of its development. Not improbably entomostracous crustaceans play the rôle of intermediary host.

The literature of *Filaria horrida* now stands as follows:—

OWEN.—Art. Entozoa in Todd's Cyclopædia of Anat. 1839, p. 141;
Lect. on Comp. Anat. 1843, p. 74; and 2nd ed. p. 109.

- DIESING.—Syst. Helm. vol. ii. 1851, p. 278. Denkschr. d. kais. Akad. Wien, xiii. 1857, S. 19 (plates). Revis. d. Nemat. 1860, S. 709.
- MOLIN.—Monogr. d. Filarien, in Sitzungsber. d. k. Akad. Wien, xxviii. 1858, S. 416.
- COBBOLD.—Catalogue of Entozoa in Museum Roy. Coll. Surg. 1866, p. 8. Proceed. Zool. Soc. of Lond., Nov. 1873, p. 737 (figs.).
- SCHNEIDER.—Monogr. d. Nemat. 1866, S. 89.
- O. VON LINSTOW.—Compend. d. Helminth. 1878, S. 126.

2. OXYURIS OBESA, *Diesing*.

In Mr. Darwin's list this species is marked "Worm from duodenum of *Cavia Capybara*, floating amidst the green digesting mass: Rio Plata, May 1833." The bottle contained five females. The original find of this species was made by Natterer at Ypanema, in 1819, when he obtained large quantities from the cæcum of a *Capybara*. They were all females; at least, Diesing's description implies so. When in 1876 I gave some notice of Mr. Darwin's find, I was not aware that Schneider had already described this species. Diesing had said that the head was armed with three or four prominent papillæ, but Schneider observed and figured six, the same number of papillæ having been seen by myself. At present, no one appears to have seen the male *Oxyuris obesa*, which is not surprising considering the rarity of the males of several allied species. Schneider remarks upon the variable size of the female, his smallest specimen measuring only 7 millim. and the longest 30 millim.; nevertheless all the worms were mature. I may state that the variable length of the female *Oxyuris curvula* of the horse is even more striking; for, whilst Schneider fixes the extreme length at less than 2 inches (45 millim.), I, on the other hand, have frequently obtained specimens between 3 and 4 inches, and in one example nearly 5 inches in length (118 millim.).

The literature of *O. obesa* is meagre.

- DIESING.—Syst. Helm. 1851, vol. ii. p. 141. Denkschr. d. kais. Akad. Wien, xiii. 1857, S. 12. Revis. (*op. cit.*) S. 141.
- SCHNEIDER.—Monogr. d. Nem. 1866, S. 121 (figs.).
- COBBOLD.—Proceed. Zool. Soc. March 1876, p. 297 (figs.).
- O. V. LINSTOW.—Compend. 1878, S. 26.

3. ASCARIS SIMPLEX, *Rud*.

A. delphini, *Rud*.

In Mr. Darwin's list some parasites referable to this species are marked "Worms from stomach of a Porpoise off the I. of

Chiloe, Jan. 1835." The set comprises thirteen specimens, mostly females, the longest of which does not exceed 3 inches. It was Rudolphi who first suggested that the *Ascaris* found by Lebeck in a Gangetic Dolphin belonged to the same species. This view was confirmed by myself from an examination of Nematodes procured from a *Platanista gangetica* by Dr. John Anderson. I think it highly probable that the *Ascaris* found by Kreffft and Masters in a Dolphin captured in Port Jackson is of the same species. If so, the worm occurs in *Delphinus phocæna*, in *D. Forsteri*, in *Platanista gangetica*, and probably in Dolphins generally. Be that as it may, the whole question of Cetacean Nematodes requires careful revision. I will only at present remark that the ova from Mr. Darwin's specimens are nearly spherical, furnished with thin, transparent chorional envelopes. They give an average diameter of $\frac{1}{650}$ of an inch from pole to pole. M. Dujardin, whose description of the species is the best on record, found the eggs to be a trifle larger.

The literature of this parasite is poor and much scattered.

LEBECK.—In Neue Schrift. d. Berl. Gesell. Naturf. Fr., Bd. iii. S. 282 (*non vidi*).

RUDOLPHI.—Entoz. Hist. Nat. vol. i. p. 170. Synops. Ent. 1819, pp. 49, 54, 296.

DUJARDIN.—Hist. Nat. d. Helm. 1845, p. 220.

DIESING.—Syst. Helm. vol. ii. 1851, p. 155.

VAN BENEDEN.—Bull. de l'Acad. roy. de Belg. 1870, p. 119.

KREFFT.—Trans. Entomol. Soc. N.S.W. for July 3, 1871, p. 8.

COBBOLD.—Proceed. Zool. Soc. 1876, p. 279. Linn. Soc. Journ., Zool. 1876, vol. xiii. p. 43. 'Parasites,' Lond. 1879, p. 426. 'List of Parasites,' Int. Fish. Exh. 1883, nos. 71, 73.

O. v. LINSTOW.—Compend. 1878, S. 59.

4. *DISTOMA INCERTA*, n. sp.

Body smooth, with very fine tubercles in front; oral sucker oval, subterminal, nearly twice as large as the acetabulum; intestine simple, with wide cæcal ends; folds of uterus numerous, reaching to within a short distance of the tail; eggs oval, minute. Length $\frac{1}{16}$ " to $\frac{1}{8}$ ".

This small Trematode is catalogued by Mr. Darwin as a "Worm from mouth of a Snake allied to *Coluber*; Maldonado, Rio Plata, May 1833." I am reluctant to proclaim the species as new to science, but after careful comparison with the *Distoma Boscii* found by me in the mouth, trachea, and lungs of an American *Coluber* that died at the Zoological Gardens in 1858, I am

satisfied that the two forms are not identical (Trans. Linn. Soc. vol. xxii. p. 364, pl. 63. figs. 6, 7). In like manner I have compared it with Diesing's *Distoma clava* (found by Natterer in *Coluber flaviventris* as well as in several allied S. American snakes, including *Oloelia fasciata*, in which latter host the worms were on one occasion taken from the throat). Certainly, Mr. Darwin's fluke corresponds with *D. clava* more nearly than it does with *D. Boscii*, but there are differences apart from the remarkable disparity of size. In the new species the vitellaria are confined within the central part of the body and the reproductive papilla occupies the usual position, well above the acetabulum. The eggs are very numerous, of a dark-brown colour, having a long diameter of about $\frac{1}{1000}$ " , whereas the ova of *D. Boscii* measure fully $\frac{1}{750}$ " from pole to pole.



Distoma incerta.
× 35 diam.

The remaining parasites are Ectozoa.

5. LERNEA BRANCHIALIS.

This species is marked: "Worm buried in the tail of a *Gadus*; T. del Fuego, Mar. 1833." Of the three specimens of female epizoa, two were perfect. Excepting the length of the neck, they differ in no essential from the ordinary species attached to the gills of the Cod. In the example dissected, the neck was imbedded beneath the skin to the extent of $\frac{3}{4}$ of an inch, the so-called head being branched in the usual manner. These epizoa were included in the English collection of parasites at the International Fisheries Exhibition, 1883.

6. This refers to a solitary specimen marked: "Worm from under branchial covering of fish; T. del Fuego, 1834." It is evidently a lernean allied to the ordinary *L. branchialis*, but displays a large number of loose filaments attached to and nearly concealing the body. The head is wanting. Int. Fish. Exhib., "List of Parasites," no. 23.

7. Specimen marked: "Worm on scale of fish; T. del Fuego, Jan. 1833." Repeated examination of the scales and underlying muscular fibres yielded no trace of any parasite.

8. "Worm from branchiæ of *Lota* or *Gadus*; when caught protruded a transparent case full of eggs; T. del Fuego, Jan. 1834." This lernean is also lost.